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# Nanostructured water-phosphorite suspension is a new promising fertilizer

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## Abstract

© Pleiades Publishing, Ltd., 2015. A rival import-substituting biosafe nanofertilizer, a nanostructured water-phosphorite suspension with a particle size of 60.0-120.0 nm, has been obtained for the first time from the natural raw phosphorite of Tatarstan's Syundyukovskoe deposits by ultrasonic material dispersion. The nanofertilizer is shown to have no acute phytotoxicity against nine test plants at the rates of 0.25-10.0 kg per ton of seeds and no toxic or mutagenic properties against the microbiological test system at concentrations of 0.2-200.0 μg/mL. In greenhouse, field, and farm-scale trials of agricultural crops under open and protected ground conditions, different methods and rates of nanofertilizer application are studied to show the high efficiency of the nanostructrured water-phosphorite suspension upon soil fertilization at a rate of 1.0 t/ha and presowing treatment of seeds at a rate of 1.25 kg/t of seeds. It is established that the morphometric indices of plants increases from 8.3% to 3.5-fold, the fresh yield increases from 2.4% to 2.2-fold, and the fruit yield increases from 14.5 to 24.1%. The improvement in crop production quality by a set of indices from 0.3% to 2.6-fold was noted.

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